

Monthly Marine Biotoxin Report December 2006

Technical Report No. 06-24

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of December, 2006. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at sites between San Luis Obispo and San Diego counties during December (Figure 1). The distribution

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during December, 2006.

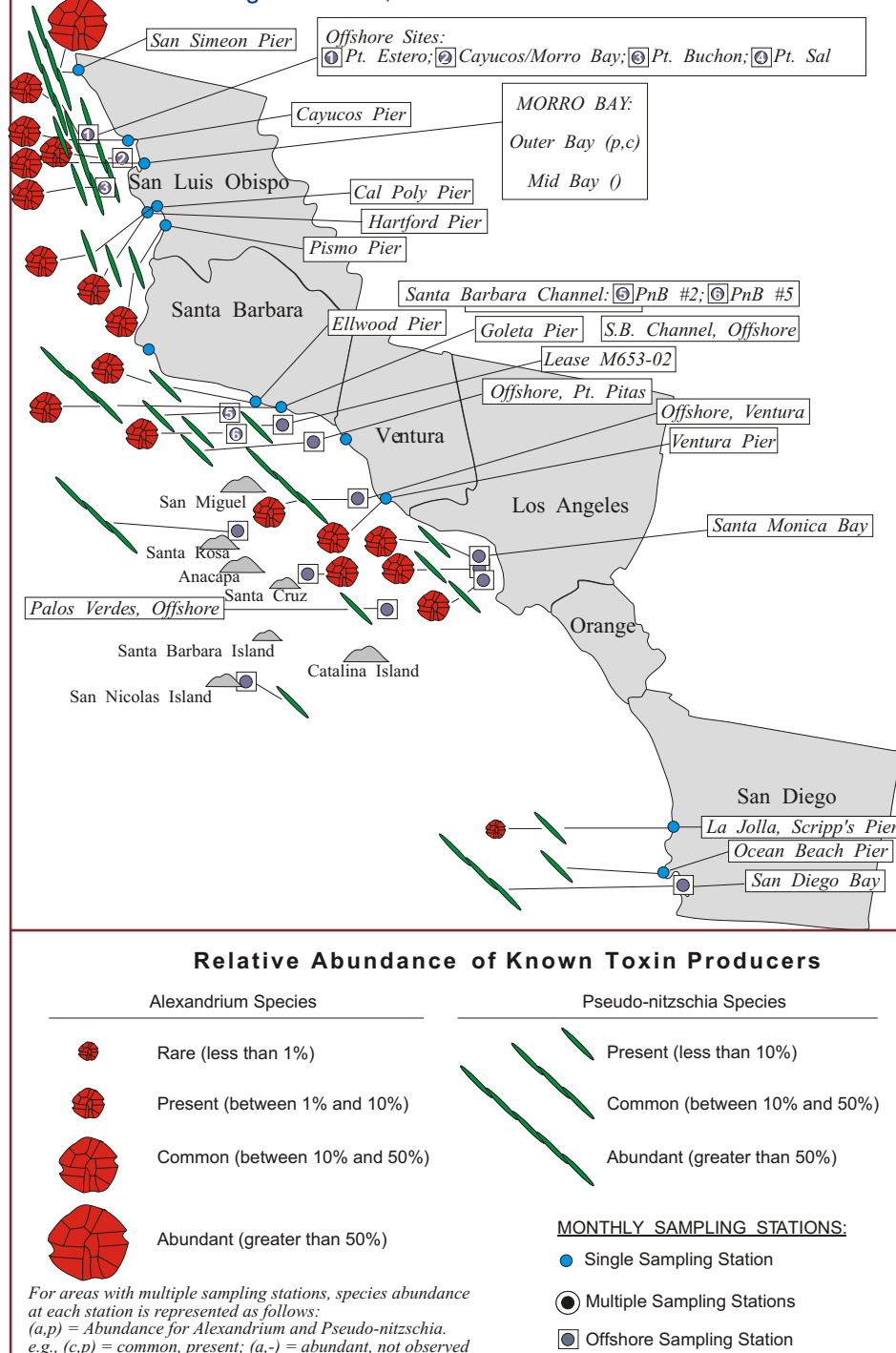
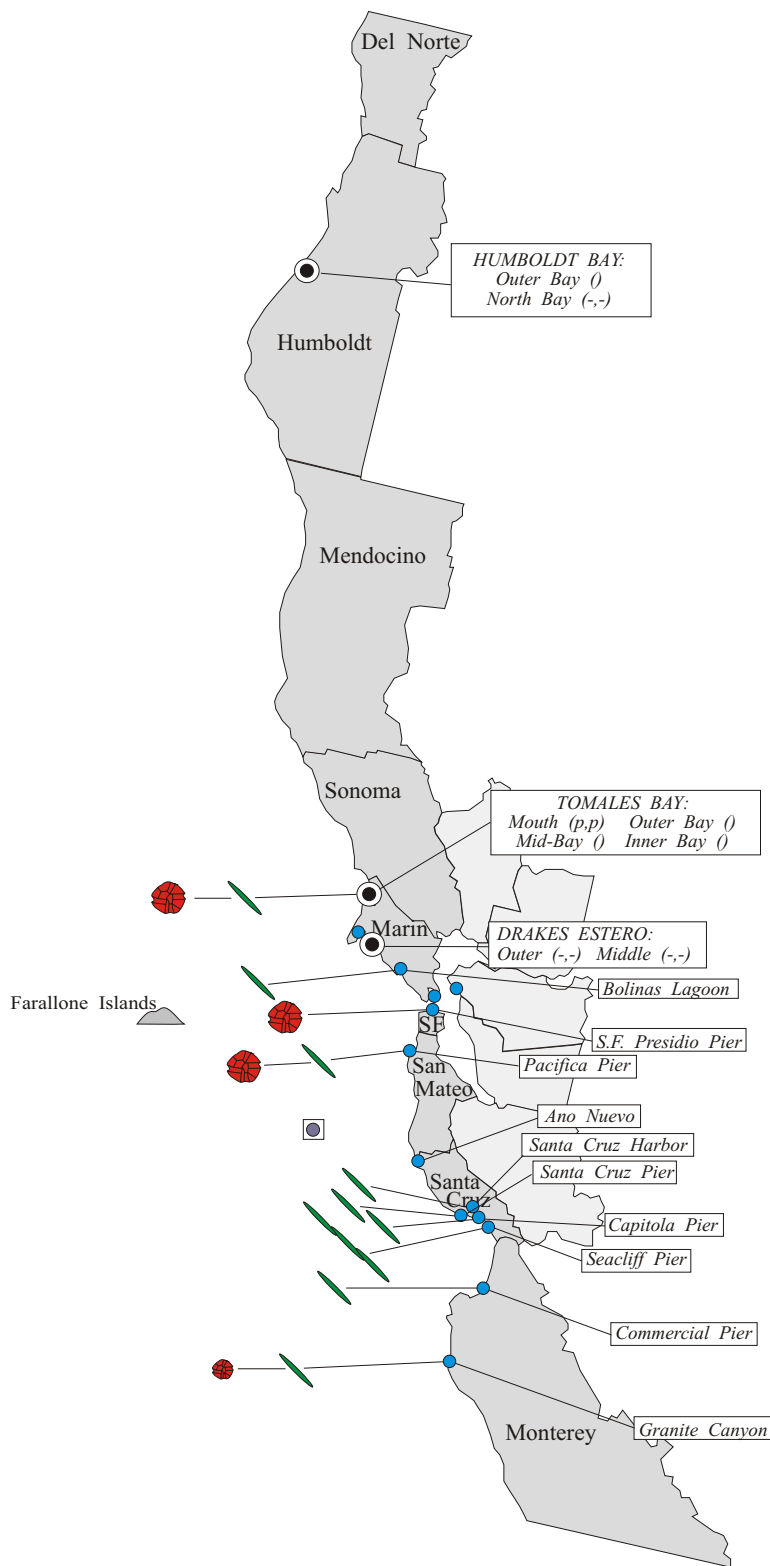


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during December, 2006.



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and relative abundance of this dinoflagellate was similar to observations in November, although the cell mass declined in December. *Alexandrium* was observed offshore near Santa Cruz Island as well. The highest cell numbers were observed at San Simeon Pier (December 9) and offshore of Pt. Estero (December 4). This marks the tenth consecutive month that *Alexandrium* has been observed along a significant portion of the Southern California coast.

Low concentrations of PSP toxins continued to be detected in mussels from several sites along the San Luis Obispo coast. Low levels of these toxins persisted throughout most of the month inside Morro Bay and at the Cal Poly pier in Avila (Figure 3). These toxins were also detected in mussels from Cayucos Point and in lobster viscera from samples collected near Anacapa Island.

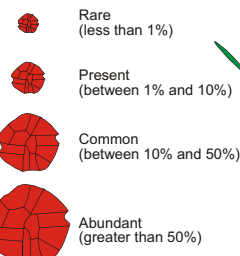
Domoic Acid

Pseudo-nitzschia continued to be observed along the entire Southern California coast in December (Figure 1). The distribution was similar to observations in November, although cell densities were low at most sites. The elevated relative abundance of this diatom inside San Diego Bay was associated with a non-toxic species. Domoic acid was not detected in any shellfish samples collected in December. Elevated levels of this

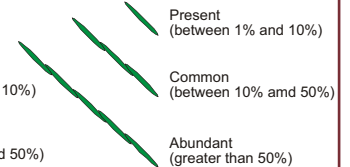
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Relative Abundance of Known Toxin Producers

Alexandrium Species



Pseudo-nitzschia Species



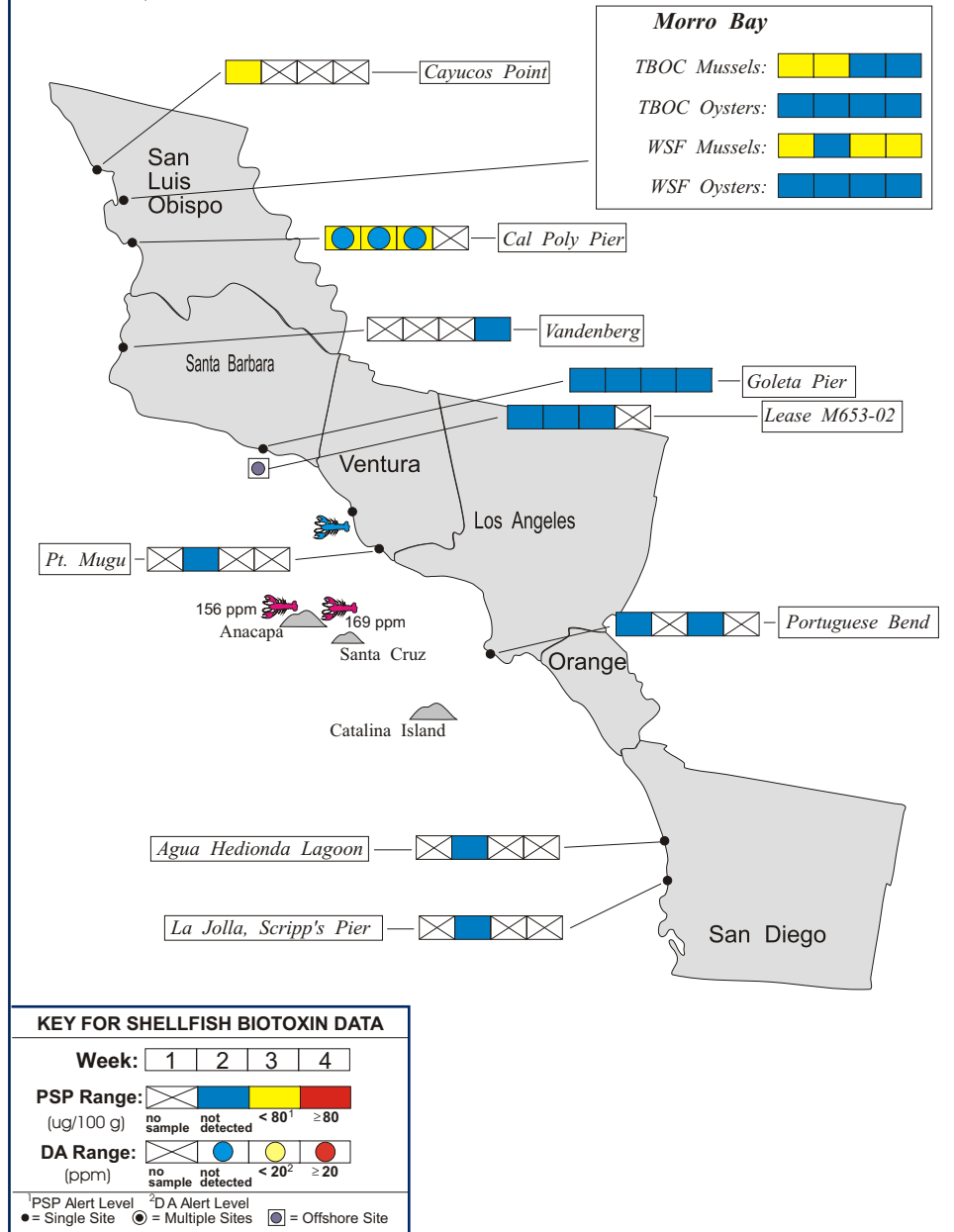
MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:

(A,P) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 3. Distribution of shellfish biotoxins in Southern California during December, 2006.



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toxin were detected in samples of lobster viscera from near Anacapa Island throughout December.

Non-toxic Species

The Southern California coast continued to be characterized by a variety of diatoms and dinoflagellates. Diatoms (*Chaetoceros*, *Thalassiosira*) were more prevalent at offshore locations, including those near the Channel Islands. Conversely the nearshore sampling stations were dominated by a variety of dinoflagellate species including *Ceratium* spp., *Akashiwo sanguinea*, and *Lingulodinium polyedrum*. *Cochlodinium* was common to abundant at several sites between San Luis Obispo and San Diego counties.

Northern California Summary:

Paralytic Shellfish Poisoning

The distribution of *Alexandrium* in December was similar to observations in November (Figure 2). This dinoflagellate continued to be observed in low numbers at sites in Marin, San Francisco, San Mateo, and Monterey counties.

Low levels of PSP toxins continued to be detected in sentinel mussels from Drakes Estero throughout the month (Figure 4).

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The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Health Services, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:
(510) 412-4635

For Recorded Biotoxin Information Call:
(800) 553-4133

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Domoic Acid

The distribution of *Pseudo-nitzschia* was similar to observations in November (Figure 2). There was a slight increase in relative abundance, particularly at sites inside Monterey Bay. Domoic acid was not detected in any shellfish samples collected in December.

Non-toxic Species

A mix of diatoms and dinoflagellates continued to be observed along the Northern California coast in December. Common diatoms included *Chaetoceros*, *Skeletonema*, *Rhizosolenia*, and a variety of centric species. Common dinoflagellates included *Ceratium* and *Prorocentrum*. *Cochlodinium* continued to be common to abundant at sites inside Monterey Bay. This dinoflagellate was also common inside Tomales Bay.

**QUARANTINES:**

The annual quarantine on the sport-harvesting of mussels was rescinded at midnight on October 31 for all coastal counties except San Luis Obispo. The

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Figure 4. Distribution of shellfish biotoxins in Northern California during December, 2006.

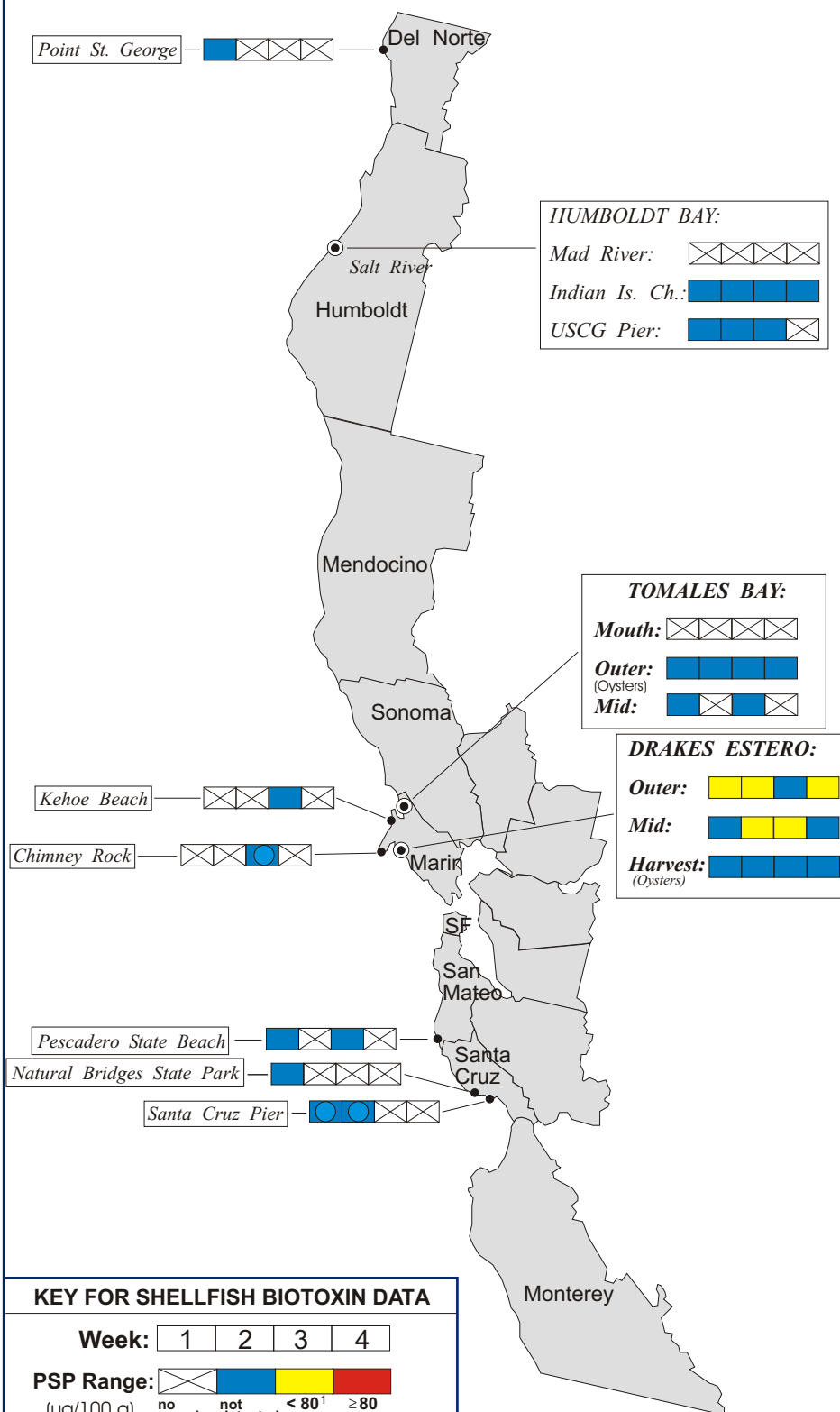


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during December, 2006.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	7
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	2
	Drakes Bay Oyster Company	16
	Hog Island Oyster Company	5
	CDHS Marine Biotoxin Monitoring Program	2
	Marin Oyster Company - None Submitted	
San Francisco	None Submitted	
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	2
	Santa Cruz County Environmental Health Department	1
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	8
	California Polytechnic State University	3
	Tomales Bay Oyster Company	6
	CDHS Volunteer (Oto Schmidt)	1
Santa Barbara	Santa Barbara Mariculture Company	6
	U.C. Santa Barbara	4
Ventura	CDHS Volunteer (Bill Weinerth)	4
	Naval Air Station, Pt. Mugu	1
Los Angeles	Los Angeles County Health Department	2
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	1
	Scripps Institute of Oceanography	1

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presence of high PSP toxin levels and elevated numbers of the toxin-producing dinoflagellate required an extension of the mussel quarantine for this county. The annual mussel quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries. Routine biotoxin monitoring is maintained throughout this period. The annual quarantine does not affect the certified commercial shellfish growing areas in California. All certified shellfish growers are required to submit at least weekly samples of shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception of razor clams, are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat.

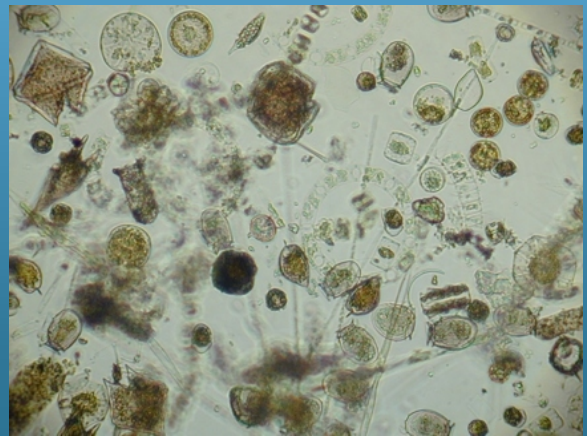
Consumers are also advised that cooking does not eliminate the toxins from the shellfish tissue. Sport harvesters are encouraged to contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during December, 2006.

COUNTY	AGENCY	# SAMPLES
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	2
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	CDHS Volunteer (Brent Anderson, Cal Strobel)	5
	Drakes Bay Oyster Company	4
	CDHS Marine Biotoxin Monitoring Program	1
	Audubon California	1
Contra Costa	CDHS Marine Biotoxin Monitoring Program	1
San Francisco	CDHS Volunteer (Eugenia McNaughton)	1
	Gulf of the Farallones National Marine Sanctuary	3
San Mateo	Marine Mammal Center Volunteer (Stan Jensen)	1
	U.C. Santa Cruz	1
Santa Cruz	U.C. Santa Cruz	3
	Marine Mammal Center Volunteer (Nancy Scarborough)	1
	Santa Cruz County Environmental Health Department	3
Monterey	Monterey Abalone Company	2
	Marine Pollution Studies Laboratory	1
San Luis Obispo	Morro Bay National Estuary Program	3
	CDHS Volunteers (Renee and Auburn Atkins, Fathom Neft)	4
	California Polytechnic State University	3
	Marine Mammal Center Volunteers (Debby Davis, Teri Woodhouse)	8
Santa Barbara	Channel Islands National Marine Sanctuary	3
	National Park Service	2
	Santa Barbara Mariculture Company	2
	U.C. Santa Barbara	3
	CDHS Volunteer (Sylvia Short)	4
Ventura	CDHS Volunteer (Fred Burgess)	2
	Channel Islands National Marine Sanctuary	1
	National Park Service	1
	Pt. Mugu NAS	1
Los Angeles	Los Angeles County Sanitation District	2
	City of Los Angeles Environmental Monitoring Division	3
Orange	None Submitted	
San Diego	Scripps Institute of Oceanography	4
	DHS Volunteer (Paul Sims, Chaire Sims)	3

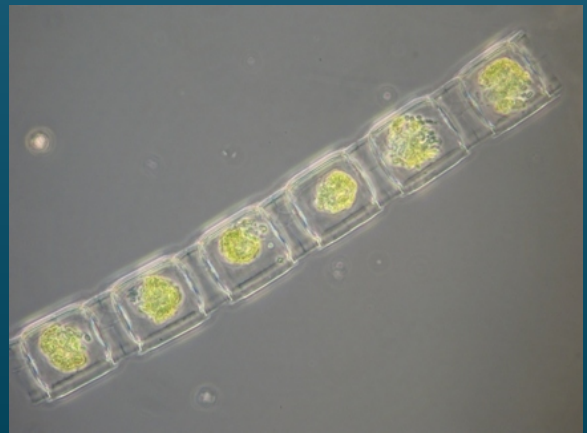
PHYTOPLANKTON GALLERY



A mix of diatoms and dinoflagellates were observed in December. There are at least 14 species in this photo.



Alexandrium continued to be observed at a number of sites in December.



Small numbers of the diatom *Lithodesmium* are often observed in samples from Southern California locations.